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UNITED STATES DEPARTMENT OF AGRICULTURE

FOREST SERVICE RO

REPLY TO: 3430 Evaluation

DATE: September 4, 1984

SUBJECT: Bravo W-75 versus Bravo 500 for control of Phoma Blight at Humboldt Nursery (Report No. 84-34)

TO: Forest Supervisor, Six Rivers National Forest

In January, 1984, Forest Pest Management initiated a field study at Humboldt Nursery to compare the relative efficacy of two formulations of the fungicide chlorothalonil for control of Phoma blight of Douglas-fir and red fir. The background, objective, and results of the study are presented below.

Humboldt Nursery has tradionally relied on the fungicide chlorothalonil (Bravo) for control of Phoma blight. In about 1979, the Nursery terminated the use of the flowable formulation (Bravo 500), which was the formulation used in early fungicide trails, and switched to the wettable powder formulation (Bravo W-75). The Nursery stopped using Bravo 500 because it was re-classified from a Category III (CAUTION) pesticide to a Category I (DANGER-POISON) pesticide. Currently, Bravo 500 is classified as a Category II (WARNING) pesticide, and Bravo W-75 is a Category I. The Nursery will probably use Bravo 500 in the future because it is now considered less toxic than Bravo W-75, and because the liquid formulation is easier to mix and apply. The objective of this study was to determine if it made any difference what formulation was used in regard to control of Phoma blight.

A randomized complete block design -- with 1) no fungicide, 2) Bravo W-75 at 2 lb/100 gal., and 3) Bravo 500 at 2 3/4 pt/100 gal. as the three treatments -- was used in one bed of 1-0 Douglas-fir and in one bed of 1-0 red fir. The experiment was replicated four times in each bed. Each replicate covered 18 feet of bed (three 4 x 6 ft plots), with the three treatments randomized in each replicate. Fungicide treatment began the first week in January and continued at 4-week intervals until July. Efficacy of treatments was evaluated by counting and removing dead seedlings at regular intervals. In July, all remaining seedlings were counted to obtain a total count per plot, and percentage of seedlings killed by Phoma in each treatment determined.

Results of the study are presented in the following table:

Treatment	Percent of Seedling Dead	
	Douglas-fir	Red Fir
No Fungicide	9.6	11.8
Bravo W-75	0.6	10.0
Bravo 500	0.2	8.4

The two formulations were equally effective in controlling Phoma blight. Bravo 500 was slightly, but not significantly, more effective than the currently used Bravo W-75 when compared with the untreated control plots. An interesting result of the study that was not anticipated when the original objective was stated is that chlorothalonil, in either formulation, controlled Phoma blight in Douglas-fir, but not in red fir. The difference may be due to differences in susceptibility of the two species to the disease.

In summary, the results indicated that, under the conditions that this study was conducted, there was no difference between Bravo W-75 and Bravo 500 in control of Phoma blight. The use of Bravo 500 on production beds at the Nursery for control of Phoma blight would be as efficacious, and environmentally more prudent, than the use of Bravo W-75.

/s/ Wilfred L. Freeman, Jr.
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Director of Forest Pest Management